MEETINGS OF THE BRITISH ASSOCIATION.

Further extracts from the Report.

In the Mathematical and Physical Section, Sir John Ross read a paper on the origin of the Aurora Borealis; the result of twenty-five years' reflection on the subject. Having frequently noticed that the Aurora was visible *between* two not very distant ships, and likewise between the ship and an iceberg, he concluded that Wollaston's opinion, that this meteor took place at great altitudes, must be erroneous. His own opinion was, that it was caused by the sun's rays striking on the circumpolar fields of ice and glaciers, and then reflected from very thin clouds aloft in the atmosphere.

Mr. Robert Mallet described an electro-magnetic machine for the purpose of separating iron filings or turnings from brass or other finely divided metals. The arrangement consists of several electro-magnets placed vertically over each other, and all excited by a single pair of large plates. A chain of buckets discharges the mixed metallic particles over the magnets, the iron adheres to them, and the brass, &c. drop into a dish beneath. The latter is removed, and at the same instant, the communication between the poles of the battery is broken; when the greatest part of the iron drops into the space between the dish containing the brass and that provided for the next portion. The mechanical motions are performed by steam power or any other first mover.

In the Chemical and Mineralogical Section, Professor Davy read a very interesting and important paper on the protection of metals attached to buoys, in which he mentioned some very curious facts with regard to the corrosion of iron by sea water, and illustrated his statements by a variety of experiments. The mode in which he proposes to secure iron, is by means of portions of zinc attached to it, in consequence of which the electrical state of the iron is altered.

Mr. Fox made a statement relative to the effects of iron, when strongly heated, on the magnet: he mentioned, that when iron was let run in a state of fusion into a trough, near which was placed a magnetized needle, that no effect was observed on the needle, until the iron has cooled to a low red heat, and that then the needle was strongly attracted. This observation, he observed, was of great importance to the geological views relative to central heat.

APPLICATION OF CHLORIDE OF SODA IN FEVER.

In the Section of Anatomy and Medicine, Dr. Graves read rather an important paper on the use of Chloride of Soda in Fever, which we now insert, as leading to its application, under similar circumstances, in places where the effects produced by the proposed remedy may be at present unknown. With regard to the time for its exhibition, and the species of fever in which it may be employed with advantage, he observed, that he had never given it except when the first stage is speedily followed by debility, and most commonly at a later period, when a depraved state of the secretions, petechiæ, or maculæ on the skin, and the well known group of symptoms are present, to which was formerly given the name of putrid fever, but which is now more generally called typhus. In inflammatory fever, in simple, continued, or nervous fever, he had never ordered this remedy; nor did he believe it to be of the least use in controlling the febrile excitement of ague or of hectic. Again, where fever is the consequence of some local inflammation, whether arising spontaneously or from an injury, the chloride of soda is quite inapplicable. Chlorine, pure and diluted, had been long used successfully as an external application and a disinfecting agent; but the internal exhibition of chloride of lime was not adopted until 1827, when it was tried by Dr. Reid. In 1832, he (Dr. G.) had commenced his observations on it, as an internal medicine. He was first induced to try it on an extensive scale, by the perusal of a very interesting pamphlet, written about three years ago by the Rev. Dr. Lawrence, the present Archbishop of Cashel, a celebrated oriental sholar and an excellent chemist. He could now state that the practice was attended with the greatest success. He (Doctor Graves) was no advocate of the doctrine that attributes all fevers to the existence of local inflammation, latent or evident; nor did he think there was a single physician of experience in Dublin, who was not convinced of the groundless and untenable character of such an hypothesis. With respect to the time for its exhibition, and the cases to which it is adapted, he observed, that when the early stage of fever is past, when all general and local indications have been fulfilled, when there is no complication with local disease, when the patient lies sunk and prostrated, when restlessness, low delirium, and more or less derangement of sensibility is present, when the body is covered with maculæ, and when the secretions from the skin and mucuous membranes give evidence of a depraved state of the fluids, it is then that the chloride of soda may be prescribed with the most decided advantage. The mode in which he prescribed it was in doses of from fifteen to twenty drops every fourth hour, in an ounce of water or camphor mixture. How it acts he would not pretend to explain; it was sufficient to say, that there was no remedy from which, in such cases, such unequivocal benefit is derived. It operates energetically, though not very rapidly, in controlling many of those symptoms which create most alarm. It seems to counteract the tendency to tympanitis, to correct the fœtor of the excretions, to prevent collapse, to promote a return to a healthy state of the functions of the skin, bowels, and kidneys; in fact, it appears admirably calculated to meet most of the bad effects of low putrid fever. In conclusion, Dr. Graves read a letter from Dr. Stokes, in which he stated his high approbation of the remedy from his experience of it, and pronounced it a most important addition to practical medicine.

Doctor Alison inquired, whether wine or any other stimulants were used during the time of its exhibition.

Dr. Graves replied in the affirmative; wine, stimulants, and nutriment were given with it, according to the exigencies of the case.

EFFECTS OF EXTERNAL PRESSURE ON THE CIRCULATING ORGANS.

Dr. Houston next read a paper on the Peculiarities of the Circulating Organs in Diving Animals. Numerous beautiful preparations and drawings, illustrative of these modifications in the porpoise, seal, otter, gannet, great northern diver, &c. were laid before the Section, which placed the subject in a very clear light. Doctor Houston introduced his subject to the meeting by explaining the operation of the vital powers on the movement of the fluids through the body, and the ready influence of various mechanical agencies on the derangement of these motions; among which, it appears that none so much impede their progress as suspension of the function of respiration. He showed, by a reference to experiments made by himself, and by reasoning on facts stated by others, that while breathing is suspended, the lungs in a great measure refuse transmission to the blood through their vessels, and this fluid, the source of life, becomes stagnant in the veins leading to these organs—a condition which, if continued beyond a certain period, is necessarily fatal to the animal. Dr. H. then proceeded to demonstrate that there is another powerful cause operating in retarding the course of the blood in animals when deeply submersed in water, and which can never be felt by beings surrounded by atmospheric air—namely, a pressure on the exterior of the body increasing with the depth of the water, and tending to repel the fluids from the surface to the deeper recesses of the body. In illustrating this fact, Dr. H. observed, that a whale, when struck with a harpoon, has descended perpendicularly, in five or six minutes, to the depth of an English mile, as shown by the length of the rope dragged after it, out of the whaler's vessel. Instances are even on record, where whales, under such circumstances, have broken their jaw-bones, and sometimes crown-bone, by the blow struck against the bottom at a depth of seven or eight hundred fathoms. At such depths as these the pressure is enormous; and it is an interesting fact, that the first hint leading to a discovery of this principle in the ocean, arose out of a singular incident in whale fishing, which occurred in the observation of the elder Scoresby; and which, as it illustrates the subject under consideration, he begged leave to introduce. A whale, struck with a harpoon, dived ra-

pidly out of sight, and when the rope of the harpoon was all drawn out, the boat to which it was fastened was dragged under water—the crew meanwhile having escaped to a piece of ice. When the whale returned to the surface "to blow," it was killed, but immediately began to sink, which, being an unusual occurrence, excited some surprise. Scoresby, who was looking on, threw the noose of a rope round the tail of the animal, which nevertheless continued sinking, until stopped by the last mentioned rope, which, when all expended, was near pulling the second boat under water. Another rope was now let down, furnished at the extremity with a grapnel, which fortunately hooked the rope belonging to the harpoon. The harpoon now lost its hold in the whale, which thereupon rose rapidly to the surface, leaving the sunken boat in connexion with the hook and ropes: Scoresby at first thought that the boat was entangled among rocks at the bottom of the sea, but he soon found that, by the assistance of about twenty men, it admitted of being raised, without, however, any lessening in weight as it neared the surface of the water. When fully dragged up, it required a boat at each end to keep it from sinking again, and was, with much difficulty, got into the ship. It appeared as completely soaked in every pore as if it had lain at the bottom of the sea since the flood; and a fragment of it, when thrown into the water, sank to the bottom like a stone.

From this incident, as important as it is curious in demonstrating the force of pressure by which the wood in a few minutes became so impregnated with water as to acquire a weight like that of a stone, a long train of very interesting experiments to ascertain the exact ratio of the weight of the sea, at different distances from the surface, were instituted by Scoresby, and afterwards by Perkins, from which it appears, among other things, that the weight increases with the depth, and that at a perpendicular depth of 2110 yards, the pressure on a cube of wood, two inches in diameter, exceeds that produced by a weight of twenty tons.

The consideration of this fact, as applied to the question of pressure on the body of a whale, at the same depth, strikes us with astonishment; for, if a square surface of sixteen inches sustains, under such circumstances, a weight of twenty tons, what must be the degree of pressure exerted on the body of an animal sixty or seventy feet long, by thirty or forty in circumference.

Under such powerful causes, operating in arresting the circulation of the blood, terrestrial animals could never exist for so long a period, as it is well known those inhabiting the water are capable of. A whale can live without breathing for twenty minutes; the most expert diver has never been known to remain under water for more than two minutes. The provision which Dr. Houston pointed out as existing in those creatures in adaptation to the peculiar element in which they live, consists of large reservoirs in connexion with the veins leading to the lungs, where the obstruction occurs serving as temporary resting places for this fluid, in which it may remain for a time without bursting the vessels, or otherwise injuring the vital functions. A comparison drawn by Dr. Houston between the condition of the vessels in the gannet, which, though an aquatic bird, takes the fish on which it preys by pouncing on them when near the surface, and the diver which plunges after and seizes them deep in the water, afforded to the meeting a satisfactory illustration of the beauty and efficacy of the provision on which such differences in the habits of those birds depend.

After an interesting discussion, Dr. Jacob, in reference to Mr. Houston's theory, gave it as his opinion, that we must look for some other cause than that assigned by Mr. H., and this cause Dr. Jacob considered to be connected with the suspension of respiration. It would appear that the existence of cells was a provision to prevent the continuance of the circulation of venous blood during the suspension of respiration, which would otherwise pass through the lung without the advantages derived from being corrected by atmospheric air. It is, therefore, a provision in connexion with the respiratory function; and this is a proof that the circulation of venous blood is calculated to prove destructive to life; and, perhaps, this is the reason for the existence of such a provision, more than the pressure on the surface. Dr. Jacob referred to the vast number of arterial ramifications which may be observed spreading up along the neck and thorax in diving animals, and first pointed out by Tyson and Hunter. These form a kind of arterial reservoir or diverticulum, a provision which, perhaps, may be made available when the blood cannot pass any further in the extreme vessels.

Dr. Williams, of London, Mr. Houston, and Mr. Corrigan having stated their sentiments on the question, Dr. Jacob observed that it was still open for discussion, whether the lung in these animals may not have the power of retaining air by compression, or some other means, and whether the tense structure and absence of porosity observed in their lungs, may not contribute to this.

ON MAKING PAPER FROM PEAT OR TURF.

In quoting into our pages, from the Report of the Proceedings of the British Association, the very clever, scientific paper, read by Mr. Robert Mallet, on producing paper from peat or turf, by a chemical process, we at the time neglected to make an observation with which we had intended to accompany it. We, therefore, again refer to the subject, as possessing considerable interest, and likely to be of much practical importance in this country. Indeed, we feel that Mr. Mallet deserves great credit for turning his attention to such practical subjects as those which he brought before the Association; and while large sums are voted by the Association to make experiments on theories, which, after all, may be of little practical importance, we cannot see why a subject such as that brought forward by Mr. Mallet, and which might prove of immense benefit to Ireland, should not be properly and fairly tested. We, therefore, respectfully submit to the Managing Committee of the British Association, that a better application of a portion of its funds could not be made than by placing it at the disposal of Mr. Mallet, to make further experiments, on a larger scale than he would perhaps be warranted in making, were they to be defrayed from his own private resources. If we are not mistaken, a sum little short of £1500 has been remitted to the Association from this country, after paying all expenses of the meetings here. We trust that some portion of this will be expended on investigations having reference to the good of the country in which it was raised.

THE MERCHANT'S DAUGHTER.

Mr. Editor—Last autumn I passed some weeks with a Mr. Fitzmaurice, a retired merchant, whose abode was a suburban villa in our delightful environs. His attention was almost exclusively engrossed by his only child, a daughter; her mother had died while the little Isabella was yet an infant, but her surviving parent was determined that his own anxious care should fully make amends for the absence of the parent she had lost. Accordingly, he took care to have her trained in every accomplishment that fashion demanded; her time was passed chiefly in academies, and the intervals she spent at home were filled up with the drilling of governesses in every conceivable branch of ornamental instruction. Her progress was such as all these labours might lead one to expect, for she regularly carried off the prizes at all the annual and half-yearly exhibitions. Every one said she had attained perfection, and she modestly believed that what every one said must be true. At length her education was pronounced to be concluded, and she quitted the academy to preside at her father's table, with the aid of a female friend and of all her own accomplishments.

My visit took place shortly after Isabella's return from school. On the morning which followed my arrival I was seated in the drawing-room, with Isabella and her friend (Miss Singleton), when a britzka drove up, charioteered by a person whose appearance seemed quite to exaggerate the newest fashions. He handled the reins with scientific ease, a cigar protruded from each side of his mouth, his chevelure might have served Giuletti, the Parisian perruquier, for a model of elegance, and the fur on the breast, and cuffs, and collar of his coat, might well have raised the envy of a Russian bear. This exquisite personage